**Name: Raunak Sadarangani**

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**Task 1 - Energy auditing a computer system & recommend how sustainability can be integrated into an upgrade**



Instruction

• Gather information to prepare the installation of an energy measuring device on a computer system

• Prepare for the installation of the device

• Configure and test the device

• Complete and document installation and test results

• Evaluate opportunities to integrate sustainable ICT projects and reduce energy consumption

**Project Resources**

Current Cost EnviR Energy Monitor

Warning: Installation is simple yet if you are in Australia, for liability reasons it is required to be carried out by a qualified electrician when in in a power switchboard.

* <http://www.smartnow.com.au/installinstructions.php>
* <http://www.smartnow.com.au/current_cost_bridge.php>

**Theory**

Complete the following notes:

1. Q: Does the Current Cost EnviR Energy Monitorcomply with Electrical Safety Standards?

Yes the monitor does comply with Electrical Safety Standards.

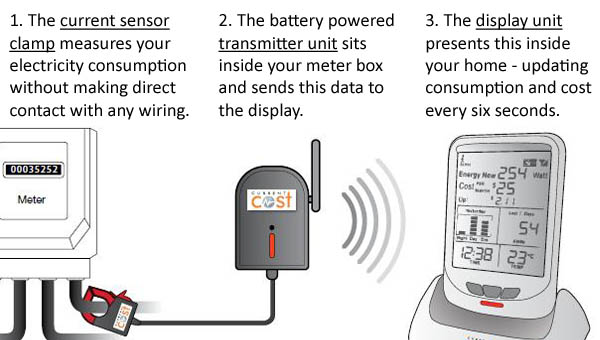
1. Advise how you prepared the installation of Current Cost EnviR Energy Monitor

Firstly connect the current sensor clamp and the transmitter unit. (as per below)

The battery powered transmitter (which sits inside the meter box)

Then Insert the batteries in display unit and power up.

Connect the current sensor clamp to input electrical wire.



1. Advise how you configured and tested the Current Cost EnviR Energy Monitor

First connect the clamp to the live wire and connect transmitter unit.

Turn on the transmitter unit.

Connect the transmitter unit to PC to download the data.

Analyze the result with the computer to generate the report.

1. Advise how you could document the installation and energy audit

(see<http://my.currentcost.com/>)

Record the electrical power consumption of the following devices in various scenarios.

1. PC
2. Server
3. Web Client
4. Thin Client
5. Practicum

* **Identify power consumptionof a computer system under different operating conditions using the Current Cost EnviR Energy Monitor and appropriate power lead or similar energy meter.**
* **Recommendations on upgrading computer system.**

1. Record power consumption and notes e.g. range, variability, operating conditions:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Condition** | **Power consumption**  **(watts)** | | | | **Notes** |
|  | **PC** | ThinClient  Y100 | WebClient | Server Blackbox |  |
| **OFF** | 17 | 0.3 | 0.27 | 19 |  |
| **MAX BOOT** | 51 | 3.5 | 5.1 | 42 |  |
| **IDLE** | 42 | 3.2 | 3.4 | 42 |  |
| **Wordprocessing** | 36 | 3.3 | 5.1 | 44 |  |
| **Spreadsheets** | 36 | 3.3 | 5.1 | 44 |  |
| **Web browsing**  <http://news.bbc.co.uk/2/hi/programmes/click_online/default.stm> | 45 | N/A | 4.6 | N/A | N/A = could not connect device  Out to the internet. |
| **Low level music**  <http://grooveshark.com/#/s/Fall+At+Your+Feet/3KIZB0?src=5> | 44 | N/A | 6.7 | N/A | N/A = could not connect device  Out to the internet. |
| **Low level video**  <http://www.joost.com/39w1yk49/#/?video_info=33p1yw1t> | 57 | N/A | 5.2 | N/A | N/A = could not connect device  Out to the internet. |

1. Evaluate the extent to which sustainability could be integrated into an upgrade of the computer system. Advise your recommendations:

When upgrading a computer system several requirements need to be considered, a majority of the time one of these requirements which is not considered is sustainability. Incorporating sustainability into a computer upgrade does not require anymore thought than those of computing requirements. There are many different ways to incorporate sustainability into a computer upgrade; one that is more often used is virtualization.

**Using server virtualization instead of physical server being used.**

Virtualization is a perfect solution for applications that are meant for small- to medium-scale usage in production. As a thumb of rule it not recommended for high-performance applications where one or more servers need to be clustered together to meet performance requirements of a single application because the added overhead and complexity would only reduce performance.

**Migrant desktop workstation to Thin Client or Zero Client or We Client**